WHAT IS CLAIMED IS:

1. A layered material, comprising:

a substrate;

an ink formulation on at least a portion of the substrate, the ink formulation comprising ink and at least one monomer selected from acrylate esters, vinyl ethers, cycloaliphatic diepoxides, and polyols; and

a lacquer on at least a portion of the ink formulation, the lacquer comprising at least one monomer selected from acrylate esters, vinyl ethers, cycloaliphatic diepoxides, and polyols.

2. The layered material according to claim 1, wherein the acrylate ester in the ink formulation and/or lacquer is a multifunctional acrylate ester selected from acrylated polyols having a molecular weight ranging from 150 to 600; polyester acrylates having a molecular weight ranging from 1000 to 2000; polyether acrylates having a molecular weight ranging from 200 to 1500; polyester urethane acrylates having a molecular weight ranging from 400 to 2000; polyurea acrylates having a molecular weight ranging from 400 to 2000; and epoxy acrylates having a molecular weight ranging from 300 to 1000.

3. The layered material according to claim 1, wherein the acrylate ester in the ink formulation and/or lacquer is a multifunctional acrylate ester selected from pentaerythritol tetraacrylate, ditrimethylolpropane tetraacrylate, trimethylolpropane triacrylate, glycerol triacrylate, triacrylate ester of tris(2-hydroxy-ethyl)isocyanurate,

hexanediol diacrylate, dipentaerythritol hexacrylate, and ethoxylated and propoxylated derivatives thereof.

4. The layered material according to claim 1, wherein the substrate comprises at least one polymer selected from polyolefins, polyolefin copolymers, polystyrene, polyesters, polyamides, polyimides, polyacrylonitrile, polyvinylchloride, polyvinyl dichloride, polyvinylidene chloride, polyacrylates, ionomers, polysaccharides, silicones, natural rubbers, and synthetic rubbers.

5. The layered material according to claim 1, wherein the lacquer has a normalized thickness ranging from 0.5 g/m^2 to 20 g/m^2.

6. The layered material according to claim 1, wherein the lacquer coats a portion of the ink formulation.

7. The layered material according to claim 1, wherein the lacquer coats the ink formulation.

8. The layered material according to claim 1, wherein the lacquer coats the ink formulation and the substrate surface.

9. The layered material according to claim 8, further comprising a second substrate positioned on the lacquer.

10. The layered material according to claim 1, wherein the ink formulation and lacquer are curable by exposure to highly accelerated particles generated by a particle beam processing device operating at a voltage in a range of 125 kVolts or less.

11. The layered material according to claim 10, wherein the ink formulation and lacquer is curable by exposure to highly accelerated particles generated by a

particle beam processing device operating at a voltage in a range of 110 kVolts or less.

12. The layered material according to claim 11, wherein the highly accelerated particles emit energy ranging from 0.5 Mrads to 10 Mrads.

13. A layered material, comprising:

a substrate;

an ink formulation on at least a portion of the substrate, the ink formulation comprising ink and at least one polymer derived from at least one monomer selected from acrylate esters, vinyl ethers, cycloaliphatic diepoxides, and polyols; and

a lacquer on at least a portion of the ink formulation, the lacquer comprising at least one polymer derived from at least one monomer selected from acrylate esters, vinyl ethers, cycloaliphatic diepoxides, and polyols.

14. The layered material according to claim 13, wherein at least a portion of the ink formulation is bonded to at least a portion of the lacquer.

15. The layered material according to claim 14, wherein at least a portion of the ink formulation is chemically bonded to at least a portion of the lacquer.

16. The layered material according to claim 13, wherein the lacquer coats a portion of the ink formulation.

17. The layered material according to claim 13, wherein the lacquer coats the ink formulation.

18. The layered material according to claim 13, wherein the lacquer coats the ink formulation and the substrate surface.

19. A package comprising the material according to claim 13.

20. A layered material, comprising:

a substrate;

an ink formulation on at least a portion of the substrate, the ink formulation comprising ink and at least one first polymer; and

a lacquer on at least a portion of the ink formulation, the lacquer comprising at least one second polymer, wherein the at least one first polymer is bonded to the at least one second polymer.

21. The layered material according to claim 20, wherein the at least one first polymer is chemically bonded to the at least one second polymer.

22. The layered material according to claim 21, wherein the at least one first polymer is covalently bonded to at least a portion of the at least one second polymer.

23. The layered material according to claim 20, wherein the at least one first polymer is crosslinked to at least a portion of the at least one second polymer.

24. The layered material according to claim 20, wherein the at least one first polymer and the at least one second polymer comprise an interpenetrating network.

25. The layered material according to claim 20, wherein the at least one first and second polymers are independently derived from at least one monomer selected from acrylate esters, vinyl ethers, cycloaliphatic diepoxides.

26. A package comprising the layered material according to claim 20.

27. A method for making a layered material, comprising:

providing a substrate;

applying an ink formulation on at least a portion of the substrate, the ink formulation comprising ink and at least one monomer selected from acrylate esters, vinyl ethers, cycloaliphatic diepoxides, and polyols; and

applying at least a portion of the ink formulation with a lacquer, the lacquer comprising at least one monomer selected from acrylate esters, vinyl ethers, cycloaliphatic diepoxides, and polyols.

28. The method according to claim 27, further comprising exposing the ink formulation and lacquer to highly accelerated particles generated by a particle beam processing device operating at a voltage of 125 kVolts or less.

29. The method according to claim 28, further comprising exposing the ink formulation and lacquer to highly accelerated particles generated by a particle beam processing device operating at a voltage of 110 kVolts or less.

30. The method according to claim 27, wherein the highly accelerated particles emit energy ranging from 0.5 Mrads to 10 Mrads.

31. The method according to claim 27, wherein the highly accelerated particles cause polymerization of the monomers in the ink formulation and the lacquer.

32. The method according to claim 31, wherein the polymerization is a free radical polymerization.

33. The method according to claim 32, wherein the lacquer and ink formulation comprise monomers selected from acrylate esters.

34. The method according to claim 31, wherein polymerization is a cationic polymerization.

35. The method according to claim 34, wherein the lacquer and ink formulation comprise monomers selected from cycloaliphatic diepoxide and polyols.

36. The method according to claim 27, the ink formulation is applied by at least on method selected from flexography printing, rotor-gravure printing, offset lithography printing, and spray printing.

37. The method according to claim 27, wherein the lacquer is applied by at least one method selected from a roll coating application, an offset gravure application, and a direct gravure application.

38. A layered material, comprising:

a substrate;

an ink formulation on at least a portion of the substrate, the ink formulation comprising ink and at least one monomer curable by free radical and/or cationic polymerization; and

a lacquer on at least a portion of the ink formulation, the lacquer comprising at least one monomer curable by free radical and/or cationic polymerization.